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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
08/770,381	12/03/1996	DAVID KESSLER	74508NAB	3450

1333 7590 01/11/2005

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EXAMINER	
WILSON, JACQUELINE B	

ART UNIT	PAPER NUMBER
2612	

DATE MAILED: 01/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	08/770,381	KESSLER ET AL.	
	Examiner	Art Unit	
	Jacqueline Wilson	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 July 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4,5,10-13 and 15-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *19* is/are allowed.

6)☒ Claim(s) *1,4,5,10-12 and 15-18* is/are rejected.

7)☒ Claim(s) *13* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION VII

Response to Arguments

1. Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

Please see new ground of rejections below.

Claim Rejections - 35 USC § 112

1. Claim 13 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 13 recites the limitation "spatial filter" in line 4. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 4, 10, 11, 12, 15 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greivenkamp, Jr. '193 and Pan (U.S. 5,317,655).

Regarding Claim 1, Greivenkamp, Jr. '193 teaches an imaging apparatus for generating an image signal from incident light with higher spatial frequencies of the incident light limited to reduce undersampling artifacts comprising an image sensor for generating the image signal from an array of photosites, and an optical section having a birefringent uniaxial crystal spatial filter, having a first and second plane plate 16 and 20, interposed in a path of the incident light to produce a blurred image on the photosites (col. 1, lines 40-55; col. 3, lines 50-65). Greivenkamp, Jr. '193 further discloses that by blurring the version of the original image, the spatial resolution is (limited) reduced (col. 1, lines 45-48; also col. 3, lines 61- col. 4, line 5). This teaches that a portion of the high spatial frequency is removed to produce the blurred image on the photosites. However, Greivenkamp, Jr. '193 fails to disclose the birefringent uniaxial crystal optical filter birefringence is greater than 0.05 and being made of lithium niobate. Pan'655 teaches an optical filter formed of birefringent crystal such as lithium niobate (col. 1, lines 44-46). Lithium niobate has a birefringent value of 0.09, which is greater than 0.05. The strong wavelength dependent characteristic of the polarization conversion resulting from the birefringent characteristic of lithium niobate makes the device useful in applications such as multiplexing and/or demultiplexing. Therefore, it would have been obvious to one of ordinary skill in the art to have the birefringent crystal optical filter to be made of lithium niobate which has a birefringence greater than 0.05.

Regarding Claim 4, Greivenkamp, Jr. '193 teaches an imaging apparatus for generating an image signal from incident light with higher spatial frequencies of the incident light limited to reduce undersampling artifacts comprising an image sensor for generating the image signal from an array of photosites, and an optical section having a birefringent uniaxial crystal optical filter interposed in a path of the incident light to produce a blurred image on the photosites (col. 1, lines 40-55; col. 3, lines 50-65). Greivenkamp, Jr. '193 states that by blurring the version of the original image, the spatial resolution is (limited) reduced (col. 1, lines 45-48; also col. 3, lines 61- col. 4, line 5). This teaches that a portion of the high spatial frequency is removed to produce the blurred image on the photosites. However, Greivenkamp, Jr. '193 fails to disclose the birefringent uniaxial crystal spatial filter is lithium tantalate. Pan'655 teaches that lithium tantalate is used as an optical birefringent crystal element (col. 3, lines 22+). Like lithium niobate, Pan'655 teaches that lithium Tantalate may also be used since both are less expensive than other birefringent crystals. Therefore, it would have been obvious to one of ordinary skill in the art to use lithium Tantalate as a birefringent uniaxial crystal spatial filter for reducing cost of the device.

Regarding Claim 10, Greivenkamp, Jr. '193 teaches the four spot rays (See Fig. 2a).

Regarding Claim 11, Greivenkamp, Jr. '193 teaches the optical section includes a lens and the optical filter is positioned between the lens and the photosites for blurring the image on the photosites (See Fig. 1; col. 3, lines 50-65; col. 1, lines 40-50).

Claim 12 is analyzed and discussed with respect to Claim 10. (See rejection of Claim 10 above.)

Regarding Claim 15, Greivenkamp, Jr. '193 teaches the second plate comprises a plane which is tilted at a 45^0 angle to a plane of the first plate (col. 4, lines 36-45).

Regarding Claim 18, Greivenkamp, Jr. '193 teaches that the thickness of the first plate is not equal to the thickness of the second plate (see fig. 9a).

3. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Greivenkamp, Jr. '193 and Pan'655 as applied to claim 1 above, and further in view of Takatori et al. (U.S. 5,715,085).

Regarding Claim 5, neither Greivenkamp, Jr. '193 nor Pan'655 teaches an angle between an optical axis of the spatial filter and a line normal to a filter facet is 37.85^0. However Takatori et al. '085 teaches that the angle of the spatial filter with respect to the incident plane is set smaller than an angle of 45^0 (col. 1, lines 65-68). Takatori et al. '085 teaches that due to the fact that an angle of inclination of the optical axis of the spatial filter with respect to the incident plane is set about 35^0, which includes the angle 37.85^0, even when the angle of incidence of the incident light is great, variations of the separation width between an ordinary ray and an extraordinary ray are not great, that is, the characteristic of the spatial filter does not vary according to the angles of incidence of the incident light (col. 2, lines 1-9). When an angle of incidence of an incident light ray into the incident plane is large, the separation width of the ray varies greatly (col. 1, lines 40-49). It would be advantageous to have the angle set below 45^0 and about 35^0

to prevent the generation of a false signal due to the width of the ray. Therefore, it would have been obvious to one of ordinary skill in the art wherein an angle between an optical axis of the spatial filter and a line normal to a filter facets is below 45^0 and about 35^0, which includes the angle 37.85^0.

4. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Greivenkamp, Jr. '193 and Pan'655, and further in view of Watanabe et al. (U.S. 3,784,734).

Regarding Claim 17, neither Greivenkamp, Jr. '193 nor Pan'655 teaches a thickness of the first plate is equal to a thickness of the second plate. However, Watanabe et al. '734 discloses that the sheets (Fig. 20, elements 34a and 34b) are identical to each other (col. 10, lines 67-68). Watanabe et al. '734 teaches the thickness of the sheets (element 34a and 34b) creates a rhomboidal pattern of the four spot to be of 45^0 (col. 11, lines 54-62; see Fig. 22). By creating the thickness of the first plate to equal to a thickness of the second plate having the rhomboidal pattern of the rays, aids in producing color video signals which do not cause any moire in the reproduced picture. Therefore, it would have been obvious to one of ordinary skill in the art to have the thicknesses of the first and the second plate to be of equal value.

Allowable Subject Matter

5. Claim 13 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

2. Claim 19 is allowed.

Regarding Claim 19, the prior art neither teaches nor fairly suggests an imaging apparatus for generating an image signal from incident light with higher spatial frequencies of said incident light limited to reduce undersampling artifacts, said apparatus comprising: an image sensor for generating the image signal from an array of photosites; an optical section having a spatial filter made of a highly birefringent uniaxial crystal selected from a group comprised of lithium niobate and lithium tantalate interposed in the path of the incident image light so as to produce at least four spots at a detector plane; and wherein said *birefringent uniaxial crystal spatial filter is comprised of two double refractors, and said four spots form a rhomboidal pattern wherein a sharp angle of the rhomboid is* 45^0 *and wherein the spatial filter is rotated about an optical axis of the imaging apparatus such that a base of the rhomboidal pattern forms an angle with one of two major coordinates of the imaging apparatus of between* 20^0 *to* 40^0.

Conclusion

1. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacqueline Wilson whose telephone number is (703) 308-5080. The examiner can normally be reached on 8:30am-5:00pm (alternate Fridays off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on (703) 305-4929. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JBW
12/29/04

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